SIROCCO OBSERVATIONS IN THE SOUTHWESTERN PART OF PALESTINE.

By WALTER GEORGII.

[Abstracted from *Meteorologische Zeitschrift*, July-August, 1919, pp. 193-197.]

The sirocco winds of southwest Palestine find their origin in the desert of Arabia. They are most frequent during the spring and autumn, especially during April and May and September and October. The period during which this very hot wind blows is from one to three days, although it sometimes lasts longer. The normal winds of this region are such that the land and sea breeze are very much in evidence. But when the sirocco sets in from the east or southeast, it is such as to completely neutralize the effect of the sea breeze. The meteorological conditions attendant upon the sirocco were carefully noted from the 12th to the 18th of May, 1916. Table I gives data on temperatures and humidity, for the extreme unpleasantness of the wind is due to the extremely low relative humidity and the sudden rise at the conclusion of the wind.

TABLE I.

Date.		Shelter temperature.			Psychrometer.						Relative humidity.			Extreme temperatures.	
					Dry bulb.			Wet bulb.							
		7 a.m.	2 p.m.	9 p.m.	7 a.m.	2 p.m.	9 p.m.	7 a.m.	2 p.m.	9 p.m.	7 a.m.	2 p.m.	9 p.m.	Max.	Min.
		° C.	° C.	° C.	° C.	° C.	° C.	° C.	° C.	° C.	° C.	° C.	° C.	° C.	° C.
May	9	16.2	26.4	16.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	27.5	10.0
	10	21.8	26.8	17.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	28.0	10.2
	11	17.4	29.6	18.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	30.3	13.2
	12	19.6	33.6	22.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	34.5	12.0
	13	22.3	35.4	25.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	37.8	15.2
	14	29.4	39.5	26.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	39.6	21.2
	15	25.2	39.5	28.6	24.6	39.0	26.0	13.0	20.5	14.8	18	12	23	40.1	19.2
	16	34.3	40.3	30.0	34.2	41.2	29.0	16.9	17.9	16.2	9	2	20	41.6	23.1
	17	35.5	42.0	33.7	35.8	41.0	33.1	16.2	19.0	16.1	2	5	7	43.1	25.0
	18	36.1	37.6	22.4	36.2	38.0	22.7	17.0	22.2	21.2	3	20	88	42.1	25.6
	19	22.7	25.0	18.0	20.8	25.2	18.1	19.1	20.2	16.5	85	63	85	28.8	20.0
	20	18.6	24.9	18.2	18.4	24.4	18.2	16.9	17.8	15.2	86	52	72	26.4	16.5

It will be seen from this table that during the early part of the month of May the temperatures were quite normal, the maximum for the day lay between 26° and 29° C., while the daily minimum lay between 10° and 15° C. On the 11th, however, the maximum reached 30.3° C., which may be regarded as the first symptom of the approach of the sirocco, although in all other respects the day was normal. The sudden rise of temperature during the morning of the 12th, was followed by temperatures which daily mounted higher and higher, until the 17th, the high point of the sirocco, the temperature remained above 30° C. from 5 a. m. until 11 p. m. It will also be noted that the relative humidity during the height of the wind was very low, but that during the 18th it mounted very rapidly. The effect of such low humidity was so marked that a canteen placed for a short time in the wind, in spite of the high temperature, would cool the water within.

Observations of the surface wind and of the wind aloft showed surface wind mainly from the southeast of about 6 meters per second in the middle of the day; aloft, with a southeast wind, velocities as high as 19 meters per second were obtained. The cloudiness during the period is more marked than normal, and consists of higher clouds chiefly, such as cirrus, cirro-stratus, cirro-cumulus, and alto-stratus.

The effect of the sirocco on the human body is especially marked, although the resultant sickness generally comes at the end of the wind. The sudden change of humidity combined with the high temperatures serves to dry the skin rapidly and induce nerve and heart troubles. Recovery from these ills is generally slow.—*C. L. M.*

A HOT "HURRICANE"; THE LEVANTO OF THE CANARIES.

[Reprinted from *The Journal of Geography*, December, 1919, pp. 360-361.]

Study of the wind systems of the world includes reference to a variety of local winds consequent on the cyclonic circulation. The foehn, chinook, sirocco, mistral, bora are all well known from their important human effects. They are described briefly in most textbooks of physical geography while fuller accounts may be found in such meteorological texts as Davis's Elementary Meteorology.

Among the less known winds belonging to this class is the levanto. The levanto, which blows over the Canary Islands as a hot southeasterly wind, may be considered a form of the sirocco. When a well marked cyclonic depression passes to the north of the islands the indraft brings hot, sand-laden air from the Sahara. Occasionally this wind arrives with hurricane force and then is responsible for serious destruction to vegetation and crops. The *African World* (Sept. 20, 1919) describes a recent occurrence of the levanto.

It is to be feared that the tomato and banana industries of the islands have suffered considerably from the levanto or southeast wind which swept down upon the Orotava Valley (north of the peak of Tenerife) in a hurricane of hot air charged with Saharan sand, and more than a suspicion of volcanic gases from the peak. It began to come in hot puffs like a gust from a furnace on the evening of August 22. During the night it attained to the force of a hurricane, and raged all next day and the following night, bursting open shutters and doors, filling the houses with layers of dust, and nearly choking their inmates. Trees came crashing onto roofs, and all vegetation visibly wilted before the scorching blast. Thousands of young tomato plants were killed, the bananas were blackened and rendered unsalable, and the ripe and ripening grapes of the higher slopes simply shriveled and withered. Forest fires broke out spontaneously in several places, adding dense clouds of smoke to the fog of dust.

The intense heat of the wind was doubtless due in part to foehn influence, that is to compression and consequent heating during the rapid descent into the Orotava Valley.

THE BLOWING OF THE WIND.

By ROGER ASCHAN.

A distinguished instructive writer of the sixteenth century, Roger Aschan, was not an aeronautical scientist. The following extract is from *Toxophilus*, a dialogue on the art of archery, published in 1544, and contains references of aerodynamical and meteorological interest. It is interesting to note that the events described occurred on a bright, sunny day, and that the country was comparatively flat.—*Douglas Shaw.*

To see the wind with a man's eyes, it is impossible, the nature of it is so fine and subtle; yet this experience of the wind had I once myself, and that was in the great snow which fell four years ago. I rode in the highway betwixt Topcliff-upon-Swale and Boroughbridge, the way being somewhat trodden afore by wayfaring men; the fields on both sides were plain, and lay almost yard-deep with snow; the night before had been a little frost, so that the snow was hard and crusted above; that morning the sun shone bright and clear, the wind was whistling aloft, and sharp, according to the time of the year; the snow in the highway lay loose and trodden with horse feet, so as the wind blew it took the loose snow with it,

and made it so slide upon the snow in the field, which was hard and crusted by reason of the frost overnight, that thereby I might see very well the whole nature of the wind as it blew that day. And I had a great delight and pleasure to mark it, which maketh me now far better to remember it. Sometime the wind would be not past two yards broad, and so it would carry the snow as far as I could see. Another time the snow would blow over half the field at once. Sometime the snow would tumble softly, bye and bye it would fly wonderful fast. And this I perceived also, that the wind goeth by streams and not whole together. For I should see one stream within a score on me; then the space of two score, no snow would stir, but after so much quantity of ground, another stream of snow, at the same very time, should be carried likewise, but not equally, for the one would stand still, when the other flew apace, and so continue, sometime swiftlier, sometime slowlier, sometime broader, sometime narrower, as far as I could see. Nor it flew not straight, but sometime it crooked this way, sometime that way, and sometime it ran round about in a compass. And sometime the snow would be lift clean from the ground up to the air, and bye and bye it would be all clapt to the ground, as though there had been no wind at all; straightway it would rise and fly again. And that which was the most marvel of all, at one time two drifts of snow flew, the one out of the west into the east, the other out of the north into the east. And I saw two winds, by reason of the snow, the one cross over the other, as it had been two highways. And again, I should hear the wind blow in the air, when nothing was stirred at the ground. And when all was still where I rode, not very far from me more marvel at the nature of the wind than it made me cunning in the knowledge of the wind; but yet thereby I learned perfectly that it is no marvel at all, though men in wind lose their strength in shooting, seeing so many ways the wind is so variable in blowing.—*Aeronautics, London, Dec. 11, 1919, p. 525.*

SPEED OF UPPER WINDS.

[Reprinted from *Aeronautics* (London), Jan. 15, 1920, p. 68.]

The pilot balloons which are sent up daily to record the movements of the atmosphere at various altitudes showed on January 9 that, in the upper air, the wind was traveling southeast at a phenomenal speed. At 16,000 feet its velocity was from 70 to 80 miles an hour; at 26,000 feet the wind was moving at the astonishing speed of 180 miles an hour. The Airco service at a comparatively low altitude found that, even over the Channel, where as a rule the winds are strongest, the velocity was not more than from 40 to 50 miles an hour.

SOUTHERN HEMISPHERE DECADAL AND MEAN MONTHLY ANNUAL RAINFALL.[1]

By R. C. MOSSMAN.

[Abstract.]

In studies relating to agriculture it is often desirable to compare the seasonal or monthly rainfall distribution in different regions so as to be able to form some idea of the suitability of a given locality for the cultivation of a crop not hitherto grown in that district, due regard, of course, given to such factors as temperature, sunshine, soil, and exposure. Comparisons of this nature are often affected by taking such monthly or annual normals as are available, without reference either to the length of the period embraced by the records, or the synchronism of the data. * * *. As a first step toward uniformity in the matter of Southern Hemisphere rainfall, the decadal and, generally, monthly and annual means given in the tables appended [not reprinted here] have been computed. The records are mainly from the western seaboards of South America, New Zealand, and Australia. It is hoped from the large mass of temperature, pressure, and other data available to compute decadal means for the other elements of climate, since even a superficial examination of the rainfall normals here given shows several directions in which interesting research could in this way be undertaken.—*H. L.*

[1] Quart. Journ. Roy. Meterological Soc., Oct., 1919, vol. 45, pp. 355-366.

A NEW METHOD FOR DETERMINING TOTAL RAINFALL ON THE OCEANS.

By FRITZ VON KERNER.

[Abstracted from *Meteorologische Zeitschrift*, May-June, 1919, pp. 167-168.]

Investigations by Schmidt and Lütgens on the total rainfall over the oceans have given quite discordant results (242,000 and 475,000 km.^{3}), while Brückner's value (360,000 km.^{3}) is about the average of the first two. These investigations were made upon the study of evaporation. The present investigation, however, used as its basis, the known rainfall data for the Indian Ocean and the North Atlantic. These were arranged according to latitude, together with the surface salinity of the ocean. By rearranging the data, the rainfall values were plotted against the surface salinity of the ocean. Knowing the salinity of the surface of other oceans, it is reasonable to assume that the relation between salt content and rainfall hold there also, thus giving a basis for computing the total rainfall for the entire water area. A careful computation yields for the annual rainfall over the water surface of the earth, a value of 360,500 cubic kilometers, which is in very good agreement with the value determined by Brückner upon the basis of evaporation.—*C. L. M.*

JAPANESE BUSINESS MEN BUILD MARINE METEROLOGICAL OBSERVATORY.

The construction of a marine meteorological observatory which is now going on at Kobe is expected to be completed and opened to service in March. The building of the observatory owes its origin to the contribution by Kobe business men of 230,000 yen for the purpose, and an estimate of 150,000 yen will be introduced in the forthcoming session of the Diet for wireless installation. [An additional 400,000 yen may be appropriated to extend the sending radius to ships as far as Hongkong.].—*U. S. Naval attaché at Tokyo.*